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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

1. This office action is in response to amendment dated: 6/30/2009. Based on this application, claims 1-23 are pending, out of which claims 3 and 18 have been cancelled and claim 9 has been amended.

Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2, 5-11, 14-17 and 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Reudink et al** (US Pub. No. 20040235527), hereinafter, Reudink in view of **Walton et al** (US Patent No. 6,744,743), hereinafter Walton, and further, in view of **Grube et al** (US Patent No. 5, 319,796), hereinafter, Grube.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

For claims 1 and 16, **Reudink** teaches that a communication system (**Reudink teaches system to optimize data throughput in wireless communications network, refer to Abstract and figs. 1, 2A-2D, 3A-3C and 4, paragraph 0014**) ,comprising:

a beam former (**form multiple beams, paragraphs 0052 and 0054**) that is adapted to provide a plurality of beams (forming **multiple antenna beams, abstract, paragraphs 0014 and 0092**), each of the plurality of beams providing communication for a corresponding coverage envelope (**coverage in area 360, paragraph 0014**), the plurality of coverage envelopes comprising at least one pair of overlapping coverage envelopes (**overlapping, paragraph 0014**) and at least one pair of non-overlapping coverage envelopes (non-overlapping, **paragraphs 0014**); and

---the scheduler being adapted to --- the same system resources from the group of shared system resources for use during a simultaneous data transmission to a receiver in each of the coverage envelopes (**simultaneous use of two or more beams—is possible and are easily achievable refer to paragraph 0020**) that comprises the at least one pair of non-overlapping coverage envelopes (**use of CDMA to code share a single resource among multiple users, refer to paragraph 0052**);

non-overlapping coverage envelop, (**non-overlapping antenna beams to provide directional wireless signal coverage, refer to paragraph 0014 and abstract**); (Note: **Reudink uses a code as a single source to multiple users who may at different coverage areas.**);

wherein the group of shared system resources comprises a group of channelization codes, **(Reudink teaches channels to allow code sharing of RF channels, paragraphs 0025 and 0052).**

Reudink does not teaches explicitly the following limitations, which are disclosed by Walton, as follows:

a scheduler **(schedule terminals and assign channels, paragraph 0118)** that assigns system resources from a group of shared system resources to a plurality of receivers distributed throughout the coverage envelopes **(scheduling of resources by using Code Division Multiplexing, paragraph 0061),**.

Reudink in view of Walton does not teaches explicitly the following limitations, which are disclosed by Grube, as follows:

“---schedule the allocation of the group of shared system resources such that no two users served by a pair of overlapping coverage envelopes are assigned the same system resources from the group of shared system resources---”,

(Grube teaches , “Because the two coverage areas 105, 125 overlap in the area where two mobiles 117, 129 are currently traveling, and both systems have the same channel resource, there will be interference if both systems utilize that channel at the same time”, refer to col. 3 lines 30-35. If a co-channel user begins transmitting during an assigned call, the controller 101 may move the call to another channel to avoid further interference, and the next channel is chosen as the channel with the least amount of recent co-channel usage, refer to col. 3 lines 43-47).

It would have been obvious to the person of ordinary skill in the art at the time the invention to use a scheduler that assign system resources from a group of shared system resources to a plurality of receivers distributed throughout the coverage envelopes, as taught by Walton. The combination of non-overlapping coverage area with sharing of resources could be implemented

by Base Station. The motivation for using this capability was to achieve increased capacity and/or desired levels of throughput, quality of service. Further, it would have been obvious to the person of ordinary skill in the art at the time the invention to use a scheduler to schedule the allocation of the group of shared system resources such that no two users served by a pair of overlapping coverage envelopes are assigned the same system resources from the group of shared system resources---, taught by Grube. The motivation for using this capability was to achieve techniques to schedule efficiently data transmission and to assign channels to users, refer to Walton's abstract.

For claim 9, **Reudink** teaches a method of scheduling data transmissions in a communication system that has a group of shared system resources, the communication system being adapted to provide communication with a plurality of receivers (**Reudink teaches assignments with respect to simultaneous usage are made to those pairs, such as remote stations, paragraph 0023]. Further teaches, CDMA communication channels to allow code sharing of RF channels among multiple users, paragraph 0025]. (Reudink teaches system to optimize data throughput in wireless communications network, refer to Abstract and figs. 1, 2A-2D, 3A-3C and 4, paragraph 0014)**

the method comprising the acts of:

providing a plurality of beams that each provide communications to a corresponding coverage envelope (forming **multiple antenna beams, abstract, paragraph 0092, coverage in area 360, paragraph 0014**), the plurality of coverage envelopes comprising at least one pair of overlapping coverage envelopes (**coverage in area 360, paragraph 0014, overlapping, paragraph 0014**) and at least one pair of non-overlapping coverage envelopes (**non-overlapping, paragraphs 0014**);

the plurality of receivers being distributed throughout the plurality of coverage envelopes (**distribution to remote users, paragraph 0013**) and

during a simultaneous data transmission to a receiver in each of the coverage envelopes
(simultaneous use of two or more beams---is possible and are easily achievable, refer to paragraph 0020);

Reudink does not teach following limitation, which is disclosed by Walton, as follows:

wherein the group of shared system resources comprises a group of channelization codes
(Walton teaches scheduling of resources by using code division multiplexing (CDM), which is same as channelization code division multiplexing, paragraph 0061);

Reudink in view of Walton does not teach following limitation, which is disclosed by Grube, as follows:

Served by a pair of overlapping coverage envelopes **(Grube teaches overlapping coverage area, fig. 1B and col. 3 lines 55-60);**

scheduling the allocation of the group of shared system resources such that no two receivers served by a pair of overlapping coverage envelopes receive the same system resources for use---,(Grube teaches , "Because the two coverage areas 105, 125 overlap in the area where two mobiles 117, 129 are currently traveling, and both systems have the same channel resource, there will be interference if both systems utilize that channel at the same time", refer to col. 3 lines 30-35. If a co-channel user begins transmitting during an assigned call, the controller 101 may move the call to another channel to avoid further interference, and the next channel is chosen as the channel with the least amount of recent co-channel usage, refer to col. 3 lines 43-47).

that comprises the at least one pair of overlapping coverage envelopes**(Grube teaches overlapping coverage area, fig. 1B and col. 3 lines 55-60);**

It would have been obvious to the person of ordinary skill in the art at the time the invention to use scheduling the allocation of the group of shared system resources such that receivers served by a pair of overlapping coverage envelopes receive the same system resources for use, as taught by Grube. The combination of overlapping coverage area with sharing of resources could be implemented by Base Station. The motivation for using this capability was to achieve increased capacity and/or desired levels of throughput, quality of service.

For claims 2, 10 and 17, **Reudink in view of Walton and Grube teaches all the limitations of subject matter and in addition Reudink ,further, teaches**, “The communication system set forth in claim 1, wherein the communication system comprises a fixed beam network”, **(Fixed Beam Arrays, paragraph 0050).**

For claim 11, **Reudink in view of Walton and Grube teaches all the limitations of subject matter, as applied to claim 9, as above;**

Reudink, further, teaches, The communication system set forth in claim 9, as above, the act of defining a group of channelization codes to comprise the group of shared system resources , **(Reudink teaches channels to allow code sharing of RF channels, paragraph 0025).**

For claim 14, **Reudink in view of Walton and Grube teaches all the limitations of subject matter, as applied to the method set forth in claim 9, as above, comprising, and Reudink, further, teaches**, “ the act of transmitting data to at least a subset of the plurality of receivers according to a code division multiple access (CDMA) communication protocol, **(CDMA communication channels to allow code sharing of RF channels among multiple users, refer to paragraph 0025).**..

For claims 5 and 20, **Reudink in view of Walton and Grube teaches all the limitations of subject matter, as applied to**, the communication system set forth in claims 1 and 16, as above, comprising: at least one antenna for transmitting communication signals to and receiving communication signals from the plurality of receivers, **(Reudink teaches, “multiple antenna beam remote stations”, abstract).**

For claims 6 and 21, **Reudink in view of Walton and Grube teaches all the limitations of subject matter, as applied to**, The communication system set forth in claim 1 and 16, as above, wherein the communication system comprises a cellular telephone base station, **(Reudink teaches, “cellular communication system including Base Station”, refer to paragraph 0008 and fig. 2A).**

For claims 7 and 22, **Reudink in view of Walton and Grube teaches all the limitations of subject matter, as applied to**, The communication system set forth in claim 1 and 16, as above, wherein the communication system comprises a code division multiple access (CDMA) cellular telephone base station.
(Reudink teaches, “CDMA cellular communication system including Base Station”, refer to paragraph 0009 and fig. 2A).

For claims 8, 15 and 23, **Reudink in view of Walton teaches all the limitations of subject matter, as applied to, claims 1, 9 and 16 respectively. In addition, following limitations are disclosed by Walton, as follows:**

wherein the scheduler prioritizes the plurality of receivers based on at least one scheduling priority metric prior to assigning resources from the group of shared system resources, **(scheduling of receivers based on priority metric, col. 28 line 62 through col. 29 lines 27),.**

It would have been obvious to the person of ordinary skill in the art at the time the invention to use a scheduler prioritizes the plurality of receivers based on at least one scheduling priority metric prior to assigning resources from the group of shared system resources, as taught by Walton. The capability could be implemented by Base Station. The motivation for using this capability was to assign channels based on priorities, col. 29 lines 40-42.

5. Claims 4, 12-13 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Reudink** in view of **Walton** and , further, in view of **Wiedeman et al** (US Pub. No. 2002/0039900), hereinafter, Wiedeman.

For claims 4, 12-13 and 19, **Reudink** in view of **Walton** teach all the limitations of subject matter , as applied to, claims 1, 9, 12 and 16 respectively, **Reudink, further, teaches, “wherein the scheduler” (use of CDMA to code share a single resource among multiple users, refer to paragraph 0052); maintains a list of the group of shared system resources, (see claims 4, 12-13 and 19), (available resources, paragraph 0067, 0018-0019 and 0052); and**
Reudink in view of Walton does not teach the following limitations, which are disclosed by Wiedeman, as follows:

“updates the list as shared system resources are assigned to the plurality of receivers”,
(updated system resources information, paragraph 0181).

It would have been obvious to the person of ordinary skill in the art at the time the invention to use updated list of resources, as taught by **Wiedeman**. The updated list of resources could be implemented by Base Station. The motivation for using this capability was to establish signaling channel periodically, refer to paragraph 0181.

Response to Arguments

6. Applicant's arguments filed 3/12/09 have been fully considered but they are not persuasive.

Arguments by Applicant

Applicant argues, Reudink, Walton, and Wiedeman, taken alone or in hypothetical combination, fail to teach each element of amended independent claims 1, 9, and 16. Amended independent claim 1 recites, in part, "a scheduler adapted to schedule the allocation of the group of shared system resources such that no two users served by a pair of overlapping coverage envelopes are assigned the same system resources." (Emphasis added.) Similarly, amended independent claim 9 recites, in part, "scheduling the allocation of the group of shared system resources such that no receivers served by a pair of overlapping coverage envelopes receive the same system resources during a simultaneous data transmission." (Emphasis added.).

Further, Applicant argues, First, it should be noted that in each of independent claims 1, 9, and 16, the recited group of shared system resources is specifically claimed as comprising a group of channelization codes. Channelization codes are described in the specification as imparting a uniquely identifiable pattern to each signal being transmitted by a base station. *See* Specification, page 3, lines 17-21. Furthermore, different channelization codes may be employed in conjunction with signals transmitted simultaneously within the same cell to prevent interference between the signals in a given channel. *See* Specification, page 3, line 21 - page 4, line 4. Thus, independent claims 1 and 16 recite scheduling the allocation of the group of shared system resources (i.e. the group of characterization codes) such that no two

users served by a pair of overlapping coverage envelopes are assigned the same system resources (i.e., the same characterization code), while independent claim 9 recites scheduling the allocation of the group of shared system resources (i.e. the group of characterization codes) such that no two receivers served by a pair of overlapping coverage envelopes receive the same system resources (i.e., the same characterization code) during a simultaneous data transmission.

In contrast, the cited portions of Grube appear to teach a system that operates in an opposite manner to the recitations in independent claims 1, 9, and 16. That is, while claims 1, 9, and 16 recite sharing resources (i.e. channelization codes over a given channel) such that no two users (or receivers) utilize the same channelization code, the cited portions of Grube appear to teach a system that determines if two users are in an overlapping coverage area, and if the two users are utilizing a common channel to place calls, moving one of the calls to another channel, such as the channel with the least amount of recent co-channel usage. See Grube, col. 2, lines 54-60, and col. 3, lines 40-47. That is, Grube appears to teach a system that includes transferring usage from a shared channel to a differing channel, while independent claims 1, 9, and 16 recite allocation of shared system resources (such as channelization codes used in conjunction with a single channel).

Response by Examiner

In response, examiner states , Grube teaches, “Because the two coverage areas 105, 125 overlap in the area where two mobiles 117, 129 are currently traveling, and both systems have the same channel resource, there will be interference if both systems utilize that channel at the

same time”, refer to col. 3 lines 30-35. If a co-channel user begins transmitting during an assigned call, the controller 101 may move the call to another channel to avoid further interference, and the next channel is chosen as the channel with the least amount of recent co-channel usage, refer to col. 3 lines 43-47.

Further, examiner states that Applicant has not claimed “different channelization codes may be employed in conjunction with signals transmitted simultaneously within the same cell to prevent interference between the signals in **a given channel**”. Specifically, limitation, “a given channel” is not claimed. This claim is broad.

In light of above explanation, argument by applicant is not persuasive.

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed toINDER P. MEHRA whose telephone number is (571)272-3170. The examiner can normally be reached on Monday through Friday from 8AM to 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dwayne Bost can be reached on 571-272-7023. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Inder P Mehra/
Examiner, Art Unit 2617

/Sharad Rampuria/
Primary Examiner, Art Unit 2617